

Laboratory	Metrology Lab, Tata Motors Limited, Chinhhat Industrial Area, Deva Road, Lucknow, Uttar Pradesh		
Accreditation Standard	ISO/IEC 17025: 2005		
Discipline	Mechanical Calibration	Issue Date	23.08.2015
Certificate Number	C-0540	Valid Until	22.08.2017
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	Quantity Measured/ Instrument	Range / Frequency	*Calibration Measurement Capability (\pm)	Remarks
I. DIMENSION				
1. LENGTH BAR \$		Upto 300 mm Above 300 mm to 500 mm	3 μ m 5.0 μ m	Using CMM
2. LIMIT SNAP GAUGE \$		3 mm to 35 mm 35 mm to 95 mm	1.3 μ m 2.0 μ m	Using Slip Grade 0 by Comparison Method
3. ADJUSTABLE SNAP GAUGE \$		3 mm to 95 mm	3.0 μ m	Using Slip Grade 0 by Comparison Method
4. SETTING RING/ AIR RING \$		3 mm to 205 mm	3.0 μ m	Using CMM
5. TAPER RING GAUGE \$		Upto Morse Taper 6	3.0 μ m	Using CMM
6. PLAIN PLUG GAUGE/ CYLINDRICAL MASTER MANDREL \$		0.5 mm to 65 mm > 65 mm to 100 mm	1.3 μ m 2.0 μ m	Using Slip Gauge & Comparators
7. TAPER PLUG GAUGE/ MANDREL \$		Upto Morse Taper 6 ϕ 63.4 mm	3.0 μ m	Using CMM
8. VERNIER CALIPER \$				
L.C. 0.01 mm		Upto 200 mm 200 mm to 450 mm	12.0 μ m 14.0 μ m	Using Slip Gauge "0" by Comparison Method
L.C. 0.02 mm		Upto 300 mm 300 mm to 750 mm	18.0 μ m 20 μ m	
9. GEAR TOOTH VERNIER \$		80 mm to 100 mm	18 μ m	Using Slip Gauge Grade "0" & Measuring Pin

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10. PISTOL CALIPER \$ L.C. 0.1 mm	0 to 100 mm	70 μ m	Using Slip Gauge
11. EXTERNAL MICROMETER \$ L.C. 1 μ m	Upto 150 mm Upto 200 mm	1.6 μ m 2.0 μ m	Using Slip Gauge
12. EXTERNAL MICROMETER \$ L.C. 10 μ m	Upto 150 mm Upto 200 mm	6.0 μ m 8.0 μ m	Using Slip Gauge
13. INSIDE MICROMETER (Plain & Digital) \$ L.C. 0.001 m	5 mm to 50 mm	4 μ m	Using Slip Gauge & Accessories Set Grade 0 & Slip Gauge Accessory Set
14. DEPTH MICROMETER \$ L.C. 0.01 mm	0 to 300 mm	8.0 μ m	Using Slip Gauge
15. POINT MICROMETER \$ L.C. 10 μ m L.C. 1 μ m	0 to 100 mm 0 to 100 mm	7.0 μ m 2 μ m	Using Slip Gauge Grade 0

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16. BLADE MICROMETER \$ L.C. 0.001 mm	0 to 50 mm	4 μ m	Using Slip Gauge
17. THREAD MICROMETER \$ L.C.0.01 mm	0 to 50 mm	10 μ m	Using Slip Gauge
18. DIAL GAUGE PLUNGER TYPE \$ L.C. 0.02 μ m L.C. 0.1 μ m L.C. 1.0 μ m L.C. 10 μ m	0.0199 mm 0.1999 mm 0 to 1.0 mm 0 to 25 mm 0 to 50 μ m	1.3 μ m 1.3 μ m 1.3 μ m 3.0 μ m 3.0 μ m	Using Dial Calibration Tester (I Checker & Slip Gauge)
19. DIAL GAUGE LEVER TYPE \$ L.C. 0.02 μ m L.C. 0.1 μ m L.C. 2.0 μ m L.C. 10 μ m	0.0199 mm 0.1999 mm 0 to 0.2 mm 0 to 1 mm	1.5 μ m 1.5 μ m 2.0 μ m 6.0 μ m	Using Dial Calibration Tester (I Checker)
20. DIAL COMPARATOR \$ L.C. 1 μ m L.C. 0.5 μ m	0.05 mm 0.03 mm	1.5 μ m 1.5 μ m	Using Dial Calibration Tester (I Checker)

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21.	DIAL SNAP GAUGE \$	0 to 100 mm	3.0 μ m	Using Slip Gauge
22.	DIAL BORE GAUGE \$ (Travel only)	Moving Range Anvil 1 mm Upto 1.0 mm	2.0 μ m	Using Dial Calibration Tester (I Checker)
23.	BEVEL PROTRACTOR \$ L.C. 5 minute L.C. 1 minute	0°-90°-0° 0°-90°-0°	5 minute 2 minute	Using Angle Gauge Block
24.	ANGLE GAUGE MEASUREMENT \$	0°-90°	9.0" sec of arc	Using CMM
25.	CYLINDRICAL SQUARE MASTER \$	0 to 300 mm	2.2 μ m	Using CMM
26.	RECTANGULAR SQUARE MASTER \$	0 to 500 mm	10 μ m	Using CMM
27.	V BLOCKS \$ (Plain/Magnetic) Flatness Squareness	50 mm to 200 mm	5.0 μ m 5.0 μ m	Using CMM, Mandrels, Cylindrical Square
28.	ENGINEERING SQUARE \$ (Squareness of Blade)	50 mm to 450 mm	10.0 μ m	Using CMM, Cylindrical Square, Micrometer, Slip Gauge, Micrometer

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29.	HEIGHT GAUGE \$ (Microprocessor Controlled)	0 to 1000 mm	10.0 μ m	Using Long Series Gauge Blocks.
30.	VERNIER/ DIAL/ DIGITAL HEIGHT GAUGE \$ L.C.: 0.01 mm L.C.: 02 mm	0 to 600 mm 0 to 1000 mm	25 μ m 25 μ m	Using Gauge Block Long Series Gauge Block, Square Master
31.	SURFACE PLATE *	2000 mm x 2000 mm	$1.5 \sqrt{\frac{L+W}{150}}$ μ m (L&W are in mm)	Using Electronic Level
32.	ANGLE PLATE/ BOX ANGLE PLATE * (Squareness & Flatness)	100 mm to 450 mm	11.0 μ m	Using Electronic Level, Cylindrical Square & Slip Gauge
33.	BENCH CENTRE * -Coaxiality -Parallelism	0 to 1000 mm	6.0 μ m 6.0 μ m	Using Taper Mandrels/ Dial Gauge
34.	THREAD PLUG GAUGE \$ (Metric)	3 to 40 mm	5.0 μ m	Using Micrometer, Three Wire Set
35.	THREAD RING GAUGE \$ (Metric)	3 mm to 40 mm	5.0 μ m	Using Check Plug Gauge & WCP Gauge

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36. SLIP GAUGE ACCESSORIES SET \$ (300 mm)	Base Height 25 mm	3.0 μ m	Using CMM
37. COMPARATOR STAND \$ (Flatness)	50 mm to 300 mm	2.0 μ m	Using CMM
38. FEELER GAUGE \$	0.03 mm to 1 mm	3.0 μ m	Using Digital Micrometer / Slip Gauge, Dial Comparator
39. SINE BAR \$ (Flatness Parallelism Angle)	Upto 300 mm	4 min of arc	Using CMM & Angle Gauge Block
40. SINE CENTRE \$	Upto 300 mm	4 min of arc	Using CMM & Angle Gauge Block
41. MASTER STEP GAUGE \$	0 to 600 mm	0.833/ 100 μ When L is in m	Using CMM
42. ROUGHNESS MEASUREMENT \$	Ra=3.17 μ m	9 %	Using Surfcom (Roughness Measuring Instrument)

* Measurement Capability is expressed as an uncertainty (\pm) at a confidence probability of 95%

\$Only in Permanent Laboratory

*Only for Site Calibration

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